## WHAT IS CLAIMED IS: .

1. An optical material which is a mixture of materials comprising a first material having a refractive index of not more than 1.45 for the d-line and a second material having an Abbe's number of not more than 25, wherein a relation between a refractive index for the d-line  $(n_d)$  and an Abbe's number  $(\nu_d)$  is defined as follows:

 $n_d \le -6.667 \times 10^{-3} v_d + 1.70.$ 

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- 2. The optical material of Claim 1 wherein said  $\text{Abbe's number } (\nu_d) \text{ is less than 40.}$
- 3. The optical material of Claim 1 wherein said second material comprises particles having the grain size in the range of 2 to 100 nm.
  - 4. The optical material of Claim 1 wherein said first material is an amorphous fluororesin.

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5. The optical material of Claim 1 wherein said second material is particles of a composite metal oxide of titanium and silicon  $(Si_x-Ti_{(1-x)}O_2)$  having the Abbe's number  $(\nu_d)$  of 24.4.

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6. The optical material of Claim 1 wherein said first material is an amorphous fluororesin, said second

material is particles of a composite metal oxide of titanium and silicon  $(Si_x-Ti_{(1-x)}O_2)$  having the Abbe's number  $(v_d)$  of 24.4, and a weight ratio of the particles and said amorphous fluororesin is in the range of 45:100 to 75:100.

- 7. The optical material of Claim 1 wherein said first material is a dimethylsilicone resin.
- 10 8. The optical material of Claim 1 wherein said second material comprises particles of titanium oxide  $(TiO_2)$ .
- 9. The optical material of Claim 1 wherein said first material is a dimethylsilicone resin, said second material is particles of titanium oxide (TiO<sub>2</sub>), and a weight ratio of the titanium oxide and said dimethylsilicone resin is in the range of 18:100 to 70:100.

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10. An optical material wherein a relation between a refractive index for the d-line  $(n_d)$  and an Abbe's number  $(\nu_d)$  satisfies the following condition:  $n_d \leq -0.01\nu_d + 1.70.$ 

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11. An optical material which is a mixture of materials comprising a first material having a

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refractive index of not more than 1.40 for the d-line and a second material having an Abbe's number of not more than 15, wherein a relation between a refractive index for the d-line  $(n_d)$  and an Abbe's number  $(\nu_d)$  is defined as follows:

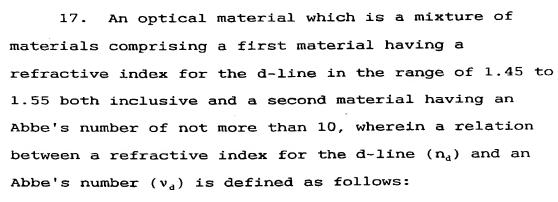
 $n_d \le -0.01v_d + 1.70.$ 

- 12. The optical material of Claim 10 or 11 wherein said Abbe's number  $(\nu_d)$  is not more than 40.
- 13. The optical material of Claim 11 wherein said second material comprises particles having the grain size in the range of 2 to 100 nm.
- 15 14. The optical material of Claim 11 wherein said first material comprises an amorphous fluororesin.
  - 15. The optical material of Claim 11 wherein said second material comprises particles of titanium oxide (TiO<sub>2</sub>).
    - 16. The optical material of Claim 11 wherein said first material is an amorphous fluororesin, said second material is particles of titanium oxide  $(\text{TiO}_2)$ , and a weight ratio of the titanium oxide and said amorphous fluororesin is in the range of 7:100 to 90:100.

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 $n_d \le -6.667 \times 10^{-3} v_d + 1.70$ .

- 18. The optical material of Claim 17 wherein said Abbe's number  $(v_d)$  is not more than 40.
  - 19. The optical material of Claim 17 wherein said second material comprises particles having the grain size in the range of 2 to 100 nm.
  - 20. The optical material of Claim 17 wherein said second material is ITO (indium-tin-oxide).
- 20 21. The optical material of Claim 17 wherein said first material is polymethyl methacrylate.
- 22. The optical material of Claim 17 wherein said first material is polymethyl methacrylate, said second material is particles of ITO (indium-tin-oxide), and a weight ratio of the particles and said polymethyl methacrylate is in the range of 30:100 to 250:100.

- 23. The optical material of Claim 17 wherein said first material is an amorphous polyolefin.
- 24. The optical material of Claim 17 wherein said first material is an amorphous polyolefin, said second material is particles of ITO (indium-tin-oxide), and a weight ratio of the particles and said amorphous polyolefin is in the range of 44:100 to 150:100.
- 10 25. The optical material of Claim 17 wherein said first material is a copolymer of methyl methacrylate and styrene.
- 26. The optical material of Claim 17 wherein said

  first material is a copolymer resin of methyl

  methacrylate and styrene, said second material is

  particles of ITO (indium-tin-oxide), and a weight ratio

  of the particles and said copolymer resin is in the

  range of 43:100 to 140:100.

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- 27. An optical member comprising the optical material as set forth in either one of Claims 1 to 26.
- 28. An optical system comprising the optical member of Claim 27.

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29. A diffracting optical element using the

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optical material as set forth in either one of Claims 1 to 26.

30. An optical system comprising the diffracting optical element of Claim 29.

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- 31. An optical device comprising the optical system of Claim 28 or 30.
- 32. A method for producing an optical material, comprising a step of decreasing a filling factor of a first material, and a step of filling gaps of the first material of the decreased filling factor with a second material having an Abbe's number different from that of the first material, thereby producing an optical material having a desired refractive index and an Abbe's number.
- 33. An optical member comprising the material
  produced by the production method as set forth in Claim
  32.
  - 34. An optical system comprising the optical member of Claim 33.

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35. The optical system of Claim 34 wherein said optical member is a diffracting optical element.

36. An optical device comprising the optical system of Claim 34 or 35.

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